

4/22/80
J.

U.S. Department of Labor

Occupational Safety and Health Administration
Washington, D.C. 20310

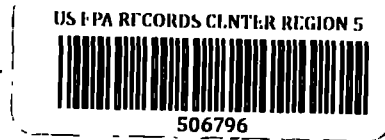


Reply to the attention of:

MEMORANDUM FOR WHOM IT MAY CONCERN

FROM: OSHA DOCKET OFFICE

SUBJECT: Explanation of OSHA's Notations on EPA's CAG
List of Carcinogens



The CAG List of Carcinogens has been referenced in OSHA's Federal Register Notice of August 12, 1980. As you may see, OSHA has placed notations beside most of the substances on the CAG list. The different notations may be explained as follows:

- X = These substances have been reviewed by OSHA although they do not appear on the Candidate List. They will be included with the Candidate List substances, however, for categorization and prioritization. Data Summary Sheets are available in the OSHA Docket Office.
- # = OSHA already has standards on these substances. Data Summary sheets are not available.
- + = Substances are found on both the Candidate List and the CAG List. The duplication was inadvertent and carries no significance.
- O = Substances on the CAG List which were not confirmed as being present in the workplace.
- () = Substances which are presently being reviewed by OSHA for possible inclusion on the 1981 Candidate List.

The CAG List of April 22, 1980 was referenced in the Federal Register Notice. Since April 22, 1980, CAG has added some additional information regarding the following substances:

<u>Page of CAG List:</u>	<u>Substances:</u>	<u>Additions:</u>
4	Ethylenethiourea	Adc: CAG reference;
6	Urethane	Adc: Ethyl carbamate; and ethyl ester of carbamic acid

- . These additions appeared on July 14, 1980 and are included on the CAG List which accompanies this memo. Some of the reports prepared by CAG are subject to confidentiality claims. Because of these claims (primarily under the Federal Insecticide, Fungicide, and Rodenticide Act) some reports may not be released. Therefore, all requests for CAG reports and related documentation must be submitted through EPA's Freedom of Information Office (A-101), Washington, D. C. 20460, and should be marked CAG/OSHA.

THE CARCINOGEN ASSESSMENT GROUP'S

LIST OF CARCINOGENS

April 22, 1980

CHEMICALS HAVING SUBSTANTIAL EVIDENCE
OF CARCINOGENICITY^a

- # 2-Acetylaminoflourene (See references)
- # Acrylonitrile (CAG, IARC)
- X Aflatoxins (IARC)*
- X Aldrin (CAG, NCI)
- # 4-Aminobiphenyl (IARC)
- X Amitrole (IARC)
- X Aramite (IARC)
- # Arsenic and Arsenic Compounds (CAG, IARC)
- X, # Asbestos (CAG, IARC)
- X Auramine and the manufacture of Auramine (IARC)
- O Azaserine (IARC)**
- O Benz(c)acridine (IARC)@
- X Benz(a)anthracene (IARC)
- # Benzene (CAG, IARC)
- # Benzidine (CAG, IARC)
- X Benzo(a)pyrene (IARC)
- O Benzo(b)fluoranthene (IARC)
- O Benzo(j)fluoranthene (IARC)O

^aThis is not a comprehensive list of all chemicals having substantial evidence of carcinogenicity. Other chemicals will be added. No attempt has been made to select chemicals based upon appropriateness for regulation by EPA. The list is intended to be a basis for selection by the various program offices according to their specific needs.

*Fungal toxin, not an industrially manufactured product.

**Used as a drug.

@Evaluated by IARC as not having sufficient evidence of carcinogenicity.

Beryllium and Beryllium Compounds (CAG, IARC)

† N,N-Bis(2-Chloroethyl)-2-Naphthylamine (Chlornaprazine) (IARC)**

X Cadmium and Cadmium Compounds (CAG, IARC)

X Carbon Tetrachloride (CAG, IARC)

X Chlorambucil (IARC)**

Chloroalkyl Ethers

X Bis(2-chloroethyl)ether (BCEE) (CAG)(IARC)@

Bis(chloromethyl)ether (BCME) (CAG, IARC)

Chloromethyl methyl ether (CMME), technical grade (IARC)

X Chlordane (CAG, NCI)

Chlorinated Ethanes

X 1,2-Dichloroethane [Ethylene Chloride, Ethylene Dichloride (EDC)]
(CAG, IARC, NCI)

X Hexachloroethane (CAG)

X 1,1,2,2-Tetrachloroethane (CAG)

X 1,1,2-Trichloroethane (CAG, NCI, IARC)@

X Chlorobenzilate (CAG)

X Chloroform (CAG, IARC)

X Chromium Compounds, Hexavalent (CAG, IARC)

() Chrysene (IARC)@

O Citrus Red No. 2 (IARC)

X Coal Tar and Soot (CAG, included in IARC's soots, tars, and oils designation)

Coke Oven Emissions [Polycyclic Organic Matter (POM)] (CAG)

X Creosote (CAG)

O Cycasin (IARC)

() Cyclophosphamide (IARC)**

**Used as a drug.

@Evaluated by IARC as not having sufficient evidence of carcinogenicity.

- O Daunomycin (IARC)**
- X DDT (Dichlorodiphenyltrichloroethane) (CAG)
- () Diallylate (CAG)(IARC)@
- O Dibenz(a,h)acridine (IARC)
- O Dibenz(a,j)acridine (IARC)
- X Dibenz(a,h)anthracene (IARC)
- O 7H-Dibenzo(c,g)carbazole (IARC)
- O Dibenzo(a,e)pyrene (IARC)
- O Dibenzo(a,h)pyrene (IARC)
- O Dibenzo(a,i)pyrene (IARC)
- # 1,2-Dibromo-3-chloropropane (DBCP) (CAG, IARC, NCI)
- X 1,2-Dibromoethane [Ethylene Bromide, Ethylene Dibromide (EDB)] (NCI, CAG, IARC)
- # 3,3'-Dichlorobenzidine (DCB) (CAG, IARC)
- X Dieldrin (CAG)
- X Diepoxybutane (IARC)
- O 1,2-Diethylhydrazine (IARC)
- X Diethylstilbestrol (DES) (IARC)**
- X Dihydrosafrole (IARC)
- X 3,3'-Dimethoxybenzidine (o-Dianisidine) (IARC)
- # p-Dimethylaninoazobenzene (IARC)
- X 7,12-Dimethylbenz(a)anthracene (See references)
- X 3,3'-Dimethylbenzidine (o-Tolidine) (IARC)
- X Dimethylcarbamoyl Chloride (IARC)
- X 1,1-Dimethylhydrazine (IARC)
- O 1,2-Dimethylhydrazine (IARC)
- X Dimethyl Sulfate (IARC)

**Used as a drug.

@Evaluated by IARC as not having sufficient evidence of carcinogenicity.

- X 2,4-Dinitrotoluene (CAG, NCI)
- X 1,4-Dioxane (NCI)
- X 1,2-Diphenylhydrazine (CAG)
- X Epichlorohydrin (CAG)
- O Ethylene Bis Dithiocarbamate (EBDC) (CAG)
- # Ethyleneimine (Aziridine) (IARC)@
- X Ethylene Oxide (CAG, IARC)
- X Ethylenethiourea (CAG, IARC)
- X Ethyl Methanesulfonate (IARC)
- X Formaldehyde (CAG)
- O Glycidaldehyde (IARC)
- X Heptachlor (CAG, NCI)
- X Hexachlorobenzene (CAG, IARC)
- X Hexachlorobutadiene (CAG)
- Hexachlorocyclohexane (HCH)
 - X HCH (CAG)
 - X HCH (CAG)
 - X HCH (Lindane) (CAG)
 - O Technical HCH (CAG)
- X Hydrazine (IARC)
- X Indeno(1,2,3-cd)pyrene (IARC)
- X Iron Dextran (IARC)**@
- X Isosafrole (IARC)
- X Kepone (Chlordecone) (CAG, NCI)
- O Lasiocarpine (IARC, NCI)
- () Melphalan (IARC)**

**Used as a drug.

@Evaluated by IARC as not having sufficient evidence of carcinogenicity.

O Methapyrilene (FDA)**

X 3-Methylcholanthrene (See references)

X 4,4'-Methylenebis(2-Chloroaniline) (MOCA) (IARC)

X Methyl Iodide (CAG, IARC)

X Methyl Methanesulfonate (IARC)

X N-Methyl-N'-nitro-N-nitrosoguanidine (IARC)

X Methylthiouracil (IARC)**

X Mitomycin C (IARC)**

O Mustard Gas (IARC)

1-Naphthylamine, technical grade (CAG)

2-Naphthylamine (IARC)

X Nickel and Nickel Compounds (CAG, IARC)

O, + Nitrogen Mustard and its hydrochloride (IARC)

O Nitrogen Mustard N-oxide and its hydrochloride (IARC)

X 5-Nitro-o-toluidine (NCI)

() 4-Nitroquinoline-1-oxide (See references).

Nitrosamines

X N-Nitrosodiethanolamine (IARC)

X N-Nitrosodiethylamine (DNA) (CAG, IARC)

N-Nitrosodimethylamine (DMNA) (CAG, IARC)

X N-Nitrosodi-n-butylamine (IARC)

X N-Nitrosodi-n-propylamine (IARC)

O N-Nitrosomethylethylamine (IARC)

O N-Nitrosomethylvinylamine (IARC)

X N-Nitroso-N-Ethylurea (NEU) (CAG, IARC)

X N-Nitroso-N-Methylurea (NMU) (CAG, IARC)

X N-Nitroso-N-methylurethane (IARC)

O N-Nitrosomorpholine (IARC)

O N-Nitrosomornicotine (IARC)

X N-Nitrosopiperidine (IARC)

X N-Nitrosopyrrolidine (IARC)

O N-Nitrososarcosine (IARC)

**Used as a drug.

@Evaluated by IARC as not having sufficient evidence of carcinogenicity.

- X Pentachloronitrobenzene (PCNB) (CAG)
- X Phenacetin (IARC)**
- X Polychlorinated Biphenyls (PCBs) (CAG, IARC)
- O Pronamide (CAG)
- X 1,3-Propane Sultone (IARC)
- # β -Propiolactone (IARC)
- X Propylthiouracil (IARC)**
- X Reserpine (NCI)**
- X Saccharin (FDA)***
- X Safrole (CAG, IARC)***
- X Selenium Sulfide (NCI)
- O Streptozotocin (IARC)**
- X 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (CAG)
- X Tetrachloroethylene (Perchloroethylene) (CAG, NCI)
- X Thioacetamide (IARC)
- X Thiourea (IARC)
- X o-Toluidine Hydrochloride (NCI)
- X Toxaphene (CAG, IARC, NCI)
- X Trichloroethylene (CAG, NCI)
- X 2,4,6-Trichlorophenol (NCI)
- O Tris(1-aziridinyl)phosphine sulfide (Tris-TEPA) (IARC, NCI)**
- X Tris(2,3-dibromopropyl)phosphate (IARC, NCI)
- X Trypan Blue, commercial grade (IARC)
- X Uracil Mustard (IARC)**
- X Urethane (IARC) (Ethyl carbamate; ethyl ester of carbonic acid)
- # Vinyl Chloride (CAG, IARC)
- X Vinylidene Chloride (CAG)

**Used as a drug.

***Used as a food.

CHEMICALS HAVING EVIDENCE OF CARCINOGENICITY

In response to requests from several EPA offices, the Carcinogen Assessment Group (CAG), Office of Health and Environmental Assessment in EPA's Research and Development Office has prepared a list of chemical substances for which substantial or strong evidence exists showing that exposure to these chemicals, under certain conditions, causes cancer in humans, or can cause cancer in animal species which in turn, makes them potentially carcinogenic in humans.

The list was initially prepared in response to the needs of the Office of Pesticides and Toxic Substances (OPTS) to develop labeling regulations under Section 6 of TSCA and the Office of Solid Waste (OSW) to develop hazardous waste regulations under Section 3001 of RCRA. It is anticipated that it will serve other purposes within the Agency according to the needs of the program offices.

The sources of information used in selecting agents as candidates for the list are of two types: chemicals which the Carcinogen Assessment Group previously has evaluated and has determined pose a potential human cancer risk; and chemicals, the carcinogenicity of which the CAG reviewed because one or more of three organizations -- the International Agency for Research on Cancer (IARC), the National Cancer Institute Bioassay Program which has been reorganized into the National Toxicology Program (NTP), and the Food and Drug Administration (FDA) of the U.S. Department of Health and Human Services -- had concluded that these chemicals are potentially human carcinogens. (Chemicals regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and the Consumer Product Safety Commission (CPSC) are also on this list but are not noted as such since they have been evaluated as being carcinogens by one of the other organizations previously mentioned). CAG evaluated the studies upon which IARC, NTP, or FDA relied and agreed with all the NTP and FDA

evaluations that the chemicals presented a potential human cancer risk. The CAG agreed with most of IARC's evaluations. There are inconsistencies between the CAG and IARC evaluations for a few chemicals because the CAG considered information not available to or not otherwise used by IARC, and because there are differences in the criteria used in making the qualitative evaluations.

The list is not a comprehensive listing of all chemicals having substantial or strong evidence of carcinogenicity. As the CAG continues to analyze chemicals for carcinogenicity, chemicals which do not now appear on the list will be added. A continuing review of evaluations by organizations such as IARC, NTP, FDA, OSHA, and CPSC may result in periodic revisions to the present list.

The CAG evaluates substances for possible carcinogenicity according to the procedures outlined in the Agency's Interim Guidelines for Carcinogen Risk Assessment found in Interim Procedures and Guidelines for Health Risk and Economic Impact Assessments of Suspected Carcinogens (41 Fed. Reg. 21402, May 25, 1976). These guidelines are consistent with the Interagency Regulatory Liaison Group's Scientific Bases for Identification of Potential Carcinogens and Estimation of Risks (Journal of the National Cancer Institute 63 (1):243-258 1979, 44 Fed. Reg. 33858, July 6, 1979), and the Regulatory Council Statement on Regulation of Chemical Carcinogens (44 Fed. Reg. 760037, October 17, 1979).

Evidence concerning the carcinogenicity of chemical substances is of three types: (1) epidemiologic evidence derived from studies of exposed human populations; (2) experimental evidence derived from long-term bioassays on animals; and (3) supportive or suggestive evidence derived from studies of chemical-structure or from short-term mutagenicity, cell transformation or other tests that are believed to correlate with carcinogenic activity.

The CAG evaluates all available evidence on the carcinogenicity of a

chemical before reaching a conclusion based on the "weight of the evidence," about the chemical's human carcinogenic potential. Conclusions about the overall weight of evidence involve a consideration of the quality and adequacy of the data and the kinds of responses induced by the suspect carcinogen. The best evidence that an agent is a human carcinogen comes from epidemiologic studies in conjunction with confirmatory animal tests. Substantial evidence is provided by animal tests that demonstrate the induction of malignant tumors in one or more species or of benign tumors that are generally recognized as early stages of malignancies. Suggestive evidence includes indirect tests of tumorigenic activity, such as mutagenicity, in vitro cell transformation, and initiation-promotion skin tests in mice. Ancillary data that bear on judgments about carcinogenic potential, e.g., evidence from systematic studies that relate chemical structure to carcinogenicity, are also considered.

Substances were placed on the CAG list only if they had been demonstrated to induce malignant tumors in one or more animal species or to induce benign tumors that are generally recognized as early stages of malignancies, and/or if positive epidemiologic studies indicated they were carcinogenic. Although the CAG has determined that there is substantial evidence of carcinogenicity for each chemical substance on the list, the data varies to some extent with respect to the scope and quality of the studies.

Not uncommonly, CAG reports are updated because new evidence becomes available. Because of this, it is important that the most recent CAG evaluation be consulted.

REFERENCES

CARCINOGENS FOR WHICH CAS REPORTS HAVE BEEN PREPARED

Acrylonitrile

Aldrin/Dieldrin

Arsenic

Asbestos

Benzene

Benzidine

Beryllium

Cadmium

Carbon Tetrachloride

Chloralkyl Ethers

Bis (2-Chloroethyl) Ether (BCEE)

Bis (Chloromethyl) Ether (BCME)

Chlordane

Chlorinated Ethanes

1,2-Dichloroethane

Hexachloroethane

1,1,2,2-Tetrachloroethane

1,1,2-Trichloroethane

Chlorobenzilate

Chloroform

Chromium

Coal Tar

Coke Oven Emissions

Creosote

DDT (Dichlorophenyltrichloroethane)

Diallate

1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane [Ethylene Dibromide (EDB)]
3,3-Dichlorobenzidine (DCB)
Dieldrin (See Aldrin/Dieldrin)
2,4-Dinitrotoluene
1,2-Diphenylhydrazine
Epichlorohydrin
Ethylene Bis Dithiocarbamate (EBDC)
Ethylene Oxide
Formaldehyde
Heptachlor
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclohexane (HCH, BHC)
Kepone
Methyl Iodide
1-Naphthylamine, technical grade
Nickel
Nitrosamines
 N-Nitrosodimethylamine (DMNA)
 N-Nitrosodiethylamine (DNA)
 N-Nitroso-N-methylurea (NMU)
 N-Nitroso-N-ethylurea (NEU)
Pentachloronitrobenzene (PCNB)
Polychlorinated Biphenyls (PCBs)
Pronamide

Acrylonitrile	<u>13</u> , 73
Aflatoxins	<u>1</u> , 145; <u>7</u> , 319, <u>8</u> , 349
4-Aminobiphenyl	<u>1</u> , 74; <u>10</u> , 343
Amitrole	<u>7</u> , 31
Aramite	<u>5</u> , 39
Arsenic & Inorganic Arsenic Compounds	<u>2</u> , 48
Asbestos	<u>2</u> , 17; <u>7</u> , 319; <u>14</u> ; <u>15</u> , <u>341</u> ; <u>17</u> , 351
Auramine and the manufacture of Auramine	<u>1</u> , 69; <u>7</u> , 319
Azaserine	<u>10</u> , 73
Benz(c)acridine [®]	<u>3</u> , 241
Benz(a)anthracene	<u>3</u> , 45
Benzene	<u>7</u> , 203; <u>11</u> , 295
Benzidine	<u>1</u> , 80
Benzo(a)pyrene	<u>3</u> , 91
Benzo(b)fluoranthene	<u>3</u> , 69
Benzo(j)fluoranthene [®]	<u>3</u> , 82
Beryllium and Beryllium Compounds	<u>1</u> , 17
N,N'-2,6-(2-Chloroethyl)-2-Naphthylamine	<u>4</u> , 119
Cadmium and Cadmium Compounds	<u>2</u> , 74; <u>11</u> , 39
Carbon Tetrachloride	<u>1</u> , 53; <u>20</u> , 371
Chlorambucil	<u>2</u> , 125
Chloroalkyl Ethers	
Bis (2-Chloroethyl)ether (BCEE) [®]	<u>2</u> , 117
Bis (Chloromethyl) Ether	<u>1</u> , 231; <u>13</u> , 243,
Chloromethyl methyl ether, technical grade	<u>1</u> , 239

[®] rated by IARC as not having sufficient evidence of carcinogenicity.

Chlorinated Ethanes	
1,2-Dichloroethane	<u>20</u> , 429
1,1,2-Trichloroethane ^Q	<u>22</u> , 515
Chloroform	<u>20</u> , 401
Chromium Compounds, Hexavalent	<u>2</u> , 100
Chrysene ^Q	<u>3</u> , 159
Citrus Red No. 2	<u>8</u> , 101; <u>19</u> , 495
Cycasin	<u>1</u> , 157; <u>7</u> , 319; <u>10</u> , 121
Cyclophosphamide	<u>9</u> , 135
Daunomycin	<u>10</u> , 145
Diallylate ^Q	<u>12</u> , 69
Dibenz(a,h)acridine	<u>3</u> , 247
Dibenz(a,j) acridine	<u>3</u> , 254
Dibenz(a,h)anthracene	<u>3</u> , 178
7H-Dibenzo(c,g) carbazole	<u>3</u> , 260
Dibenzo(a,e)pyrene	<u>3</u> , 201
Dibenzo(a,h)pyrene	<u>3</u> , 207
Dibenzo(a,i)pyrene	<u>3</u> , 215
1,2-Dibromo-3-chloropropane	<u>15</u> , 139
1,2-Dibromoethane	<u>15</u> , 195
3,3'-Dichlorobenzidine	<u>4</u> , 49
Diepoxybutane	<u>11</u> , 115
1,2-Diethylhydrazine	<u>4</u> , 153

^QEvaluated by IARC as not having sufficient evidence of carcinogenicity.

Safrole

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)

Tetrachloroethylene (Perchloroethylene)

Toxaphene

Trichloroethylene

Vinyl Chloride

Vinylidene Chloride

Diethylstilbestrol	<u>6</u> , 55
Dihydrosafrole	<u>1</u> , 170; <u>10</u> , 233
3,3'-Dimethoxybenzidine	<u>4</u> , 41
p-Dimethylaminoazobenzene	<u>2</u> , 125
3,3'-Dimethylbenzidine	<u>1</u> , 87
Dimethylcarbamoyl Chloride	<u>12</u> , 77
1,1-Dimethylhydrazine	<u>4</u> , 137
1,2-Dimethylhydrazine	<u>4</u> , 145; <u>7</u> , 320
Dimethyl Sulfate	<u>4</u> , 271
Ethyleneimine [@]	<u>9</u> , 37
Ethylenethiourea	<u>7</u> , 45
Ethyl Methanesulfonate	<u>7</u> , 245
Glycidaldehyde	<u>11</u> , 175
Hexachlorobenzene	<u>20</u> , 155
Hydrazine	<u>4</u> , 127
Indeno(1,2,3-cd)pyrene	<u>3</u> , 229
Iron Dextran [@]	<u>2</u> , 161
Isosafrole	<u>1</u> , 169; <u>10</u> , 232
Lasiocarpine	<u>10</u> , 287
Melphalan	<u>9</u> , 167
4,4'-Methylenebis(2-Chloroaniline)	<u>4</u> , 65
Methyl Iodide	<u>15</u> , 245
Methyl Methanesulfonate	<u>7</u> , 253
N-Methyl-N'-nitro-N-nitrosoguanidine	<u>4</u> , 163

[@]Evaluated by IARC as not having sufficient evidence of carcinogenicity.

Methylthiouracil	<u>7</u> , 53
Mitomycin C	<u>12</u> , 171
Mustard Gas	<u>9</u> , 161; <u>13</u> , 243
1-Naphthylamine, technical grade	<u>4</u> , 87; <u>8</u> , 349
2-Naphthylamine	<u>4</u> , 97
Nickel and Nickel Compounds	<u>2</u> , 126; <u>7</u> , 319; <u>11</u> , 75
Nitrogen Mustard and its hydrochloride	<u>9</u> , 193
Nitrogen Mustard N-oxide and its hydrochloride	<u>9</u> , 209
NITROSAMINES	
N-Nitrosodiethanolamine	<u>17</u> , 77
N-Nitrosodiethylamine	<u>1</u> , 107; <u>11</u> , 295; <u>17</u> , 83
N-Nitrosodimethylamine	<u>1</u> , 95; <u>17</u> , 125
N-Nitrosodi-n-butylamine	<u>2</u> , 197; <u>17</u> , 51
N-Nitrosodi-n-propylamine	<u>17</u> , 177
N-Nitrosomethylethylamine	<u>17</u> , 221
N-Nitrosomethylvinylamine	<u>17</u> , 257
N-Nitroso-N-Ethylurea	<u>1</u> , 135; <u>17</u> , 191
N-Nitroso-N-Methylurea	<u>1</u> , 125; <u>17</u> , 227
N-Nitroso-N-Methylurethane	<u>4</u> , 211
N-Nitrosomorpholine	<u>17</u> , 253
N-Nitrosornicotine	<u>17</u> , 281
N-Nitrosopiperidine	<u>17</u> , 287
N-Nitrosopyrrolidine	<u>17</u> , 313
N-Nitrososarcosine	<u>17</u> , 327
Phenacetin	<u>13</u> , 141
Polychlorinated Biphenyls	<u>7</u> , 261; <u>18</u> , 43
1,3-Propane Sultone	<u>4</u> , 253; <u>13</u> , 243
<u>3</u> -Propiolactone	<u>4</u> , 259; <u>13</u> , 341
Propylthiouracil	<u>7</u> , 57
Safrole	<u>1</u> , 169; <u>10</u> , 231
Soots, tars, and oils	<u>3</u> , 22

Streptozotocin	<u>4</u> , 221, <u>17</u> , 337
Thioacetamide	<u>7</u> , 77
Thiourea	<u>7</u> , 95
Toxaphene	<u>20</u> , 327
Tris(aziridinyl)phosphine sulfide (Thio-TEPA)	<u>9</u> , 85
Tris(2,3-dibromopropyl)phosphate	<u>20</u> , 575
Trypan Blue (commercial grade)	<u>8</u> , 267
Uracil Mustard	<u>9</u> , 235
Urethane	<u>7</u> , 111
Vinyl Chloride	<u>7</u> , 291; <u>19</u> , 377

COMPOUNDS EVALUATED BY IARC BUT NOT AS HAVING SUFFICIENT
EVIDENCE OF CARCINOGENICITY

Benz(c)acridine	<u>3</u> , 241
Benzo(j)fluoranthene	<u>3</u> , 82
Bis(2-chloroethyl) ether	<u>9</u> , 117
Chrysene	<u>3</u> , 159
Diallylate	<u>12</u> , 69
Ethyleneimine (Aziridine)	<u>9</u> , 37
Iron Detran	<u>2</u> , 161
1,1,2-Trichloroethane	<u>20</u> , 533

- International Agency for Research on Cancer. 1972. IARC monographs on the evaluation of the carcinogenic risk of chemicals to humans. Vol. 1. Some inorganic substances, chlorinated hydrocarbons, aromatic amines, N-Nitroso compounds, and natural products. Lyon, France. 184 pp.
- International Agency for Research on Cancer. 1973. IARC monographs on the evaluation of the carcinogenic risk of chemicals to humans. Vol. 2. Some inorganic and organometallic compounds. Lyon, France. 181 pp.
- International Agency for Research on Cancer. 1973. IARC monographs on the evaluation of the carcinogenic risk of chemicals to humans. Vol. 3. Certain polycyclic aromatic hydrocarbons and heterocyclic compounds. Lyon, France. 271 pp.
- International Agency for Research on Cancer. 1974. IARC monographs on the evaluation of the carcinogenic risk of chemicals to humans. Vol. 4. Some aromatic amines, hydrazine and related substances, N-Nitroso compounds and miscellaneous alkylating agents. Lyon, France. 286 pp.
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1,2-Dibromo-3-chloropropane (DBCP)	28
1,2-Dibromoethane	86
1,2-Dichloroethane [Ethylene Chloride, Ethylene Dichloride (EDC)]	55
2,4-Dinitrotoluene	54
1,4-Dioxane	80
Heptachlor	9
Kepone	NTIS # PB-254041/AS
Lasiocarpine	39
5-Nitro-o-toluidine	107
Reserpine	193
Selenium Sulfide	194
Tetrachloroethylene (Perchloroethylene)	13
o-Toluidine Hydrochloride	153
Toxaphene	37
Trichloroethylene	2
2,4,6-Trichlorophenol	155
Tris(1-aziridinyl)phosphate sulfide (Thio-TEPA)	58
Tris (2,3-dibromopropyl) phosphate	76

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